Systematics

→ The term systematics was given by Carolus Linnaeus

→ This term has been derived from the Latin word 'systema' which means systematic arrangement (of organisms).

→ Systematics deals with diversity of organisms and the interrelationships amongst them.

* Also,

Systematics = Taxonomy + Phylogeny.

* Phylogeny → Evolutionary history of organisms.

Nomenclature

→ Each Biological / scientific name has two components :

Genus name + Specific epithet

(or Generic name + Specific name)

→ This system of naming is called Binomial Nomenclature given by Carolus Linnaeus.

His two popular books are :

(i) Systema Naturae (w.r.t animals)

(ii) Species Plantarum (w.r.t. plants)

Rules of Nomenclature

→ Biological names are generally taken from Latin Language

→ Each organism is given ONLY one name having two components —

Genus name & Specific epithet

→ Biological name is printed in italics or underlined separately when handwritten to indicate the latin origin.

→ Genus name starts with

a capital letter and species name with a small letter.

→ Author's name is given in abbreviation after the specific epithet.

→ Binomial Epithet = Genus name + Specific epithet + Author's name in abbrev.

→ Rule of Priority: The name given first enjoys the priority of becoming a valid Biological / scientific name. Other names given to the same organism are called synonyms.

(Eg) of a Biological name:
Mangifera indica Linn.

NOTE:

① Trinomial nomenclature

↳ Has 3 parts:

Genus name + Species name + Subspecies (for animals)

OR

Variety (for plants)

Eg Homo sapiens sapiens

Brassica oleracea capitata

② Tautonym: Genus and species names are same. (Followed by zoologists ONLY)

Eg Naja naja

Catla catla

③ Autonym : species and subspecies / variety names are same.

Eg Homo sapiens sapiens

Pinus nigra nigra

④ International Codes of Nomenclature.

(i) ICBN : International Code of Botanical Nomenclature

(ii) ICZN : Int. Code of Zoological Nomenclature

(iii) ICNB : Int. Code of Nomen. of Bacteria

(iv) ICVCN : Int. Code of Virus Classific^{n} and Nomenclature

Taxon (pl. = Taxa)

→ Each category in the taxonomical hierarchy is called a **taxon**

(Eg) Animals (Kingdom - Animalia),
Mammals (Class - Mammalia),
Dog (Species, Canis familiaris),
represent taxa at different levels.

Taxonomical Hierarchy

→ It is the arrangement of different categories either in the ascending or in the descending order.

* The taxonomic groups/ categories are distinct biological entities and not merely the morphological aggregates.

(Because, apart from morphology, anatomy, cytology, physiology etc. are also taken into account).

→ There are SEVEN obligate categories (though there may be several sub categories).

P.T.O

KINGDOM

↑

DIVISION / PHYLUM
(for plants) (for animals)

↑

CLASS

↑

ORDER

↑

FAMILY

↑

GENUS

↑

SPECIES

① No. of similar characters decrease, i.e., specificity decreases

② Diversity increases

① No. of similar characters increase i.e., specificity increases

② Diversity decreases

[Taxonomical Hierarchy]

NOTE: W.R.T. Plants:

categories	Term / suffix
① Kingdom →	Plant kingdom / Plantae
② Division →	-phyta (Eg) Bryophyta, pteridophyta Magnoliophyta (Acc. to NCERT it is Angiospermae)
③ Class →	-opsida (Eg) Bryopsida -phyceae (Eg) Chlorophyceae -ae (Eg) Dicotyledonae
④ Order →	-ales (Eg) Poales
⑤ Family →	-aceae (Eg) Poaceae

SPECIES

→ The term 'species' was given by John Ray.

→ It is the fundamental / basic / lowest category in taxonomical hierarchy (w.r.t. seven obligate categories).

→ 'Biological Concept of species' was given by Ernst Mayr, popularly called 'Darwin of 20th century'.

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